

**ABSTRACT**

5 This invention is directed at torsional vibration dampers of a rotating shaft. The dampers of the invention provide self-tuning to dampen harmonics, over a broad range of shaft angular velocities. Where the shaft rotates with an angular velocity about a longitudinal axis, and rotates perpendicular to a plane of rotation, the damper comprises: at least one passive damping element, and one controlling damping element.